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(72) Inventor: **Wonnacott, Roger Joseph**  
**Launceston, Cornwall PL15 9EQ (GB)**

(74) Representative: **Hanson, William Bennett et al**  
**Bromhead Johnson,**  
**Kingsbourne House,**  
**229-231 High Holborn**  
**London WC1V 7DP (GB)**

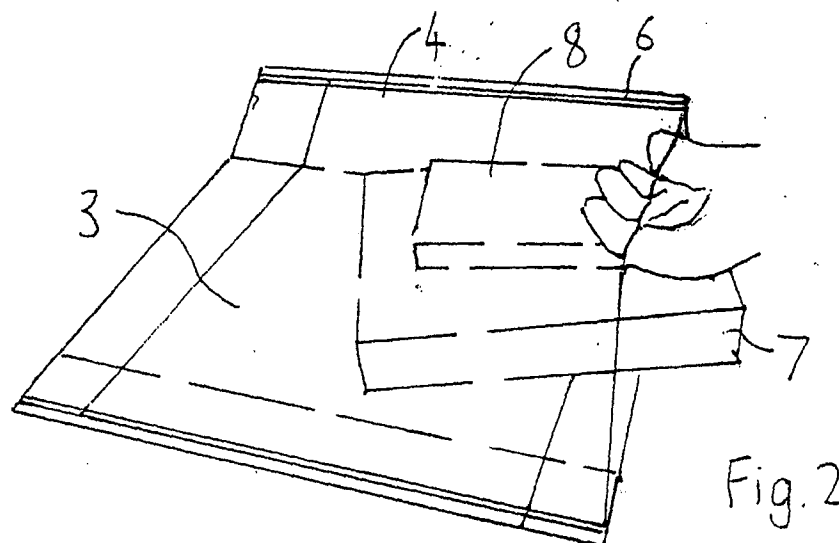
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(71) Applicant: **DS Smith (UK) Limited**  
**Launceston, Cornwall PL15 9HN (GB)**

(54) **Packaging unit**

(57) A packaging unit comprises a panel of stiff but foldable material, the panel comprising a centre portion (3) having a tacky surface. Side portions (4) are defined by side fold lines (1) at opposite edges of said centre portion (3). A sheet of flexible film faces said tacky sur-

face and is attached to the side portions (4) such that folding of the side portions away from an object (7, 8) located between the film and the centre portion (3) tightens the film against the object and secures it against the tacky surface of the centre portion.



## Description

[0001] The present invention relates to a packaging unit for securing an object.

[0002] US-A-5,678,695 describes a packaging structure for holding an object securely against a rigid backing. The structure includes a rigid panel having a centre panel portion between two folding side portions defined by parallel fold lines. A flexible film is secured to the rigid panel, for example to the side portions by means of glue strips. When an object is placed between the centre panel portion and the film and the side portions are folded away from the object, the film is tightened against the object, securing it against the centre panel portion. The packing unit containing the object can be placed inside a parallelepiped carton so as to create an impact-absorbing distance between the object and the walls of the carton.

[0003] Although US-A-5,678,695 states that various materials can be used for the film, polyurethane ester is preferred, particularly for larger objects, although it is a relatively expensive material.

[0004] It is an aim of the present invention to provide a packaging unit which can be produced less expensively than the prior art unit comprising a film of polyurethane ester, and/or which minimises movement of a packaged object even during rough handling of the unit.

[0005] Accordingly, the present invention provides a packaging unit comprising a panel of stiff but foldable material, the panel comprising a centre portion having a tacky surface and side portions defined by side fold lines at opposite edges of said centre portion, and a sheet of flexible film facing said tacky surface and attached to the side portions such that folding of the side panels away from an object located between the film and the centre portion tightens the film against the object and secures it against the tacky surface of the centre portion.

[0006] In an embodiment of the invention, the film comprises a material stretchable in all directions, such as polyethylene, in particular linear low density polyethylene (LLDPE), or polyvinyl chloride (PVC). As the tacky surface helps to keep the product in place, the film does not need to be tacky and does not have to be made from polyurethane ester. In an alternative embodiment, the film comprises polyurethane ester; such a packaging unit is capable of retaining an object in place more securely than the unit of US-A-5,678,695.

[0007] The tacky surface may comprise a coating, a printed layer or a laminated layer. It may in particular comprise a water-based or other emulsion.

[0008] The film may, for example, be attached to the side panels by means of strips of adhesive extending along the side panels.

[0009] In a particular embodiment of the packing unit, the panel comprises flaps defined by flap fold lines extending substantially perpendicular to the side fold lines. Folding of the flaps towards the object, into a position

at right angles to the centre portion, serves to limit movement of the packaging unit inside a parallelepiped carton into which it is placed.

[0010] The invention also provides a packaging assembly comprising a packing unit as described above and a substantially parallelepiped carton having a base with internal dimensions substantially equal to the dimensions of the centre portion of the panel. Where the packaging unit has the flaps mentioned above, these are suitably of a width substantially equal to the internal height of the carton.

[0011] A particular embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a plan of a packing unit according to the invention; and

Figures 2 to 4 show steps in the packaging of objects in the unit of Figure 1.

[0012] Figure 1 shows a packaging unit comprising a rectangular panel of double-faced corrugated paper-board. The panel is substantially square in this example. Two side fold lines 1 extend parallel to two sides of the panel. Parallel flap fold lines 2 extend parallel to the other two sides of the panel and intersect the side fold lines. The fold lines 1, 2 divide the panel into a centre portion 3, side portions 4 and flaps 5.

[0013] The upper surface of at least the centre portion 3 has been made tacky by coating it with a lacquer comprising a water-based emulsion or the like, as shown by the wavy lines in Figure 1. The lacquer can be applied as part of a continuous process in which the panel is manufactured.

[0014] A rectangular sheet of flexible transparent film e.g. of LLDPE, indicated by the hatched area, is attached to each of the side portions 4 at adhesive strips 6 shown by the hatching. In this example, the film covers all or nearly all of the panel. This is not a requirement, but the particular embodiment of panel shown is easy to form as part of a continuous web running in the direction of the side fold lines 1 and adhesive strips 6.

[0015] Figures 2 to 4 show how two objects such as a book 7 and a video cassette 8 are packaged within the packaging unit. As shown in Figure 2, the objects 7, 8 are inserted between the tacky surface of the centre portion 3 and the film. If necessary to provide sufficient clearance for the insertion, the side portions 4 are firstly folded upwardly to an extent, for example by pulling the film, so that the film slackens.

[0016] Figure 3 shows how the side portions 4 are then folded downwardly. In their final position the side portions lie flat against the underside of the centre portion 3. In this way, the film is pulled tight against the objects 7, 8 and the book 7 is pressed against the tacky surface of the centre portion 3.

[0017] The flaps 5 are then folded upwardly through

90° as shown in Figure 4. In this configuration, the packaging unit containing the objects 7, 8 is suitable for insertion into a parallelepiped carton (not shown) comprising a base with internal dimensions substantially equal to the dimensions of the centre portion 3. The internal height of the carton is substantially equal to the width of the flaps 5. Thus, the packaging unit completely fills the carton so that it cannot move within the carton, but a distance is maintained between the objects and the walls of the carton.

[0018] Due to the tacky or "high grab" surface of the centre portion, even heavy objects do not slide inside the packing unit when the carton is handled roughly.

[0019] All forms of the verb "to comprise" used in the above description and the appended claims have the meaning "to consist of or include".

#### Claims

1. A packaging unit comprising a panel of stiff but foldable material, the panel comprising a centre portion (3) having a tacky surface and side portions (4) defined by side fold lines (1) at opposite edges of said centre portion (3), and a sheet of flexible film facing said tacky surface and attached to the side portions (4) such that folding of the side portions away from an object located between the film and the centre portion (3) tightens the film against the object and secures it against the tacky surface of the centre portion.
2. A packaging unit according to claim 1, wherein the film comprises a material stretchable in all directions.
3. A packaging unit according to claim 2, wherein the film comprises polyethylene.
4. A packaging unit according to claim 3, wherein the film comprises linear low density polyethylene (LLDPE).
5. A packaging unit according to claim 2, wherein the film comprises polyvinyl chloride (PVC).
6. A packaging unit according to claim 2, wherein the film comprises polyurethane ester.
7. A packaging unit according to any preceding claim, wherein the tacky surface comprises a coating.
8. A packaging unit according to any one of claims 1 to 7, wherein the tacky surface comprises a printed layer.
9. A packaging unit according to any one of claims 1 to 7, wherein the tacky surface comprises a laminated layer.
10. A packaging unit according to any preceding claim, wherein the tacky surface comprises an emulsion.
11. A packaging unit according to claim 10, wherein the emulsion is water-based.
12. A packaging unit according to any preceding claim, wherein the film is attached to the side portions (4) by means of strips of adhesive (6) extending along the side portions.
13. A packaging unit according to claim 9, wherein the adhesive strips (6) are continuous from one free edge of the panel to another.
14. A packaging unit according to any preceding claim, wherein the panel comprises flaps (5) defined by flap fold lines (2) extending substantially perpendicular to the side fold lines (1).
15. A packaging assembly comprising a packaging unit according to any preceding claim and a substantially parallelepiped carton having a base with internal dimensions substantially equal to the dimensions of the centre portion (3) of the panel.
16. A packaging assembly according to claim 16, wherein the panel of the packaging unit comprises flaps (5) defined by flap fold lines (2) extending substantially perpendicular to the side fold lines (1), the width of said flaps (5) being substantially equal to the internal height of the carton.

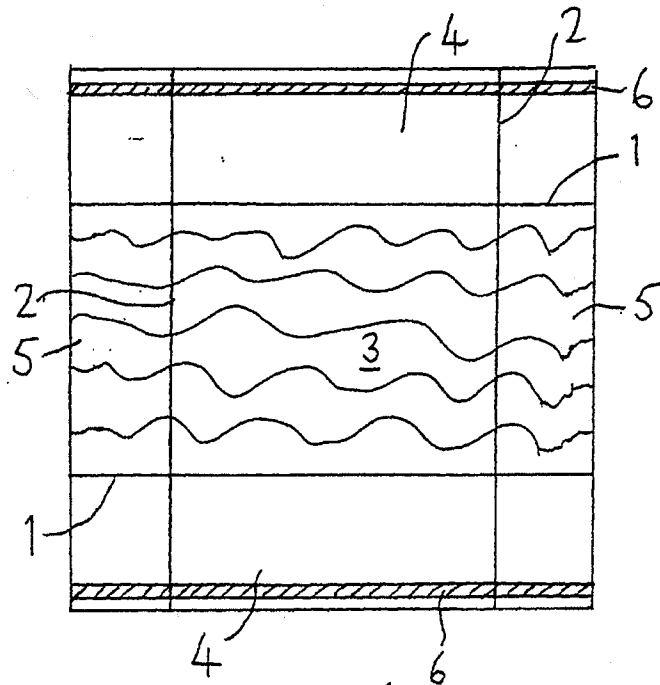


Fig. 1

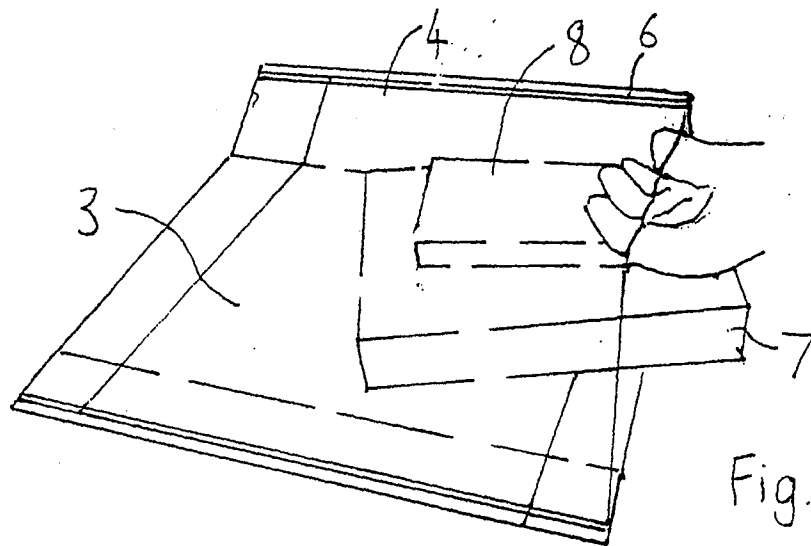


Fig. 2

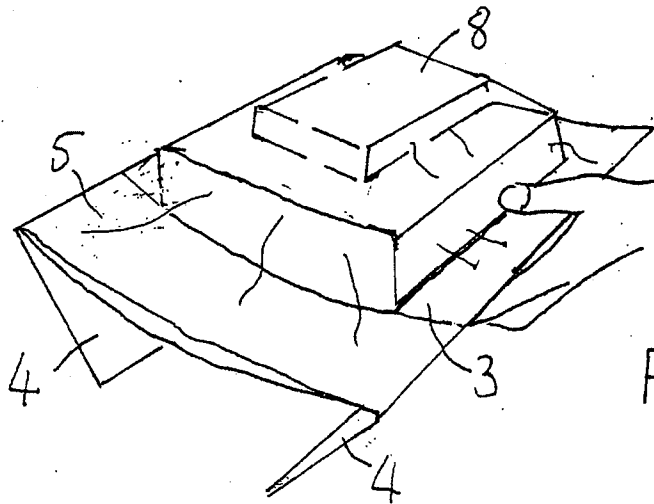


Fig. 3

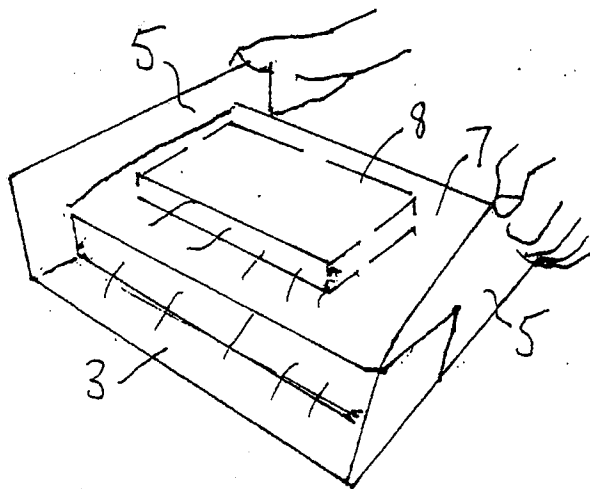


Fig. 4



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 05 25 0606

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	DE 202 17 626 U1 (SCHILLING, FRANK) 9 January 2003 (2003-01-09) * abstract; figures 1,2 * -----	1-16	B65D5/50 B65D81/07
A,D	US 5 678 695 A (RIDGEWAY ET AL) 21 October 1997 (1997-10-21) * the whole document * -----	1-16	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 25 May 2005	Examiner SERRANO GALARRAGA, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 25 0606

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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25-05-2005

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